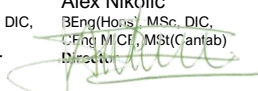




Project Museum Street  
Project No. 2633  
Subject Addendum to Basement Impact Assessment - PT Superstructure  
Client Heyne Tillett Steel Ltd

Document Reference	Status	Revision	Issued	Checked	Approved	Date
2633-A2S-XX-XX-TN-Y-0002-03	Addendum to <i>Basement Impact Assessment</i>	03	Hamed Shariff MEng(Hons), CEng MICE Associate Director	Paul Smith BEng(Hons), MSc, DIC, CEng MICE Associate Director	Alex Nikolic BEng(Hons), MSc, DIC, CEng MICE, MSt(Cantab) Director 	18.10.2024

## 1. Introduction

A-squared Studio Engineers Ltd (A-squared) has been appointed by Heyne Tillett Steel Ltd (HTS) to provide ground engineering support for the proposed 1 Museum Street and West Central Street development in Holborn, London.

This technical note is an addendum to the *Basement Impact Assessment* prepared by A-squared, dated May 2023 (ref. 2633-A2S-XX-XX-RP-Y-0002-01), termed the 'BIA'. Please refer to the BIA report for more information regarding the scheme proposals, ground conditions and review of the impact of the works on the surrounding hydrogeological, geological and hydrological regime.

The BIA was submitted in the Planning submission for the development (application no. 2023/2510/P). The Museum Street superstructure in the Rev 01 BIA comprised a steel frame with composite pre-cast concrete floor slabs. An updated scheme is under consideration which comprises post-tensioned (PT) concrete slabs, resulting in a heavier building than in the scheme previously approved.

This technical note comprises a review of findings of the BIA undertaken for the original Museum Street superstructure proposal (as referenced above) in the context of the updated PT option. This includes a discussion of the screening and scoping of the BIA, the previous investigation works undertaken, and the findings of the ground movement assessment (GMA).

## 2. Review of BIA Screening and Scoping

The BIA identified one screening question in the *Subterranean* flow chart and five questions in the *Stability* flow chart that were taken forward for scoping. The six questions can be summarised by the four statements below:

- The proposed Vine Lane basement will extend beneath the water table such that dewatering / groundwater control measures may be required during construction. The existing Selkirk House basement extends below the water table, and groundwater control in localised areas may be required where concrete breaking out works are proposed.
- Nine trees will be felled as part of the proposed works and piling works are proposed to take place within tree protection zones.
- The proposed Vine Lane basement excavation is adjacent to public highways and neighbouring structures, and will increase the differential depth of foundations relative to neighbouring properties.
- The site is directly over the Royal Mail Group Post Office tunnels, and additional assets owned by LUL, Crossrail, TWUL and UKPN fall within the zone of influence of the proposed works.



The change to the Museum Street superstructure does not affect the Vine Lane proposals, therefore impacts related to the new basement at Vine Lane remain unchanged. Similarly, the Selkirk House basement will still be reused and there are no changes to groundwater risks.

The proposed foundation solution for Museum Street remains the same (piled raft foundation under the core, shallow footings in the west of the basement, and piles in the south of the basement and outside to the north and east). The increases in building loading from the PT option will be controlled by changing pile and piled raft geometries to maintain largely the same settlement profile.

The pile locations near the trees to be retained are in the same positions and assessments of the impact to the trees included in the BIA remain valid.

Ground movement assessments of all assets around the development will be prepared as part of the RIBA Stage 3 with the findings presented to the relevant asset teams for approval.

### 3. Review of Previous Investigation Works

A site-specific ground investigation was undertaken to support the BIA and further works are proposed to aid substructure design. The combined scope comprises:

- 2no. cable percussion boreholes to depths of 50m from ground level with hand dug inspection pits.
- 2no. restricted-headroom cable percussion boreholes to depths of 20m below basement levels with hand dug inspection pits.
- 10no. window samples to depths of 6m with hand dug inspection pits.
- 1no. hand dug trial pit to a depth of 2m followed by a window sample to a maximum depth of 6m.
- 14no. 50mm standpipe installations within BH102, BH103, BH201 and all window samples targeting perched groundwater in the Made Ground and Lynch Hill Gravels.
- 3no. vibrating wire piezometer installations in BH101 at various depths within the London Clay Formation and cohesive Lambeth Group.
- 1no. 19mm standpipe piezometer installation in BH101 targeting the deep groundwater table below the London Clay Formation.
- Appropriate sampling in the form of environmental samples, open tube samples, groundwater samples, ground gas samples, small disturbed samples, and bulk samples.
- Geotechnical and geo-environmental in-situ and laboratory testing.

Considering the changes to the superstructure and any potential changes to foundation geometry, the investigations undertaken and proposed remain applicable and no further investigative works are anticipated to be required.

### 4. Review of Ground Movement Assessment Findings

The ground movement assessment, analysing the impact of the proposed development works on surrounding properties, determined that a damage category not exceeding Category 1 – Very Slight is anticipated if the ground movements caused by the wall installation, excavation and scheme construction are limited to the values presented in Table 1. These movements are directly adjacent to the Vine Lane basement, which has the largest impact on the surrounding buildings, given its proximity to the neighbouring structures and zone of influence of the excavation.

The updated Museum Street superstructure proposals will not impact the proposals at Vine Lane. Therefore, the impact to surrounding properties from the new scheme option is not anticipated to be greater than that predicted for the original scheme.



**Table 1**      **Maximum cumulative ground movement from the BIA for application 2023/2510/P**

Stage	Maximum Cumulative Ground Movement (mm)	
	Vertical	Horizontal
Secant Wall Installation	2	2
Underpin Installation	5	5
Excavation	7	13
Long-Term Condition	25	13

Ground movements directly adjacent to the Vine Lane secant wall.

## 5. Closing Remarks

A-squared has reviewed the findings of the BIA submitted for the approved steel frame with composite pre-cast concrete floor slabs superstructure proposal in the context of the updated PT option. In particular, the screening and scoping assessment, site investigation works and ground movement assessment for the scheme have been considered. Based on the review, it has been concluded that the findings of the BIA remain valid and unchanged for the proposed PT superstructure option.



# A-squared Studio

**A-squared Studio Engineers Ltd**

One Westminster Bridge Rd  
London, SE1 7XW

020 7620 2868

[contact@a2-studio.com](mailto:contact@a2-studio.com)

[www.a2-studio.com](http://www.a2-studio.com)

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